

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ALABAMA
MIDDLE DIVISION

FILED

MAY 31 2002

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ALABAMA

RF DELAWARE, INC.,

Plaintiff,

v.

PACIFIC KEYSTONE
TECHNOLOGIES, INC., et al.,

Defendants.

Civil Action No.: CV-01-PT-0348-M

See

ENTERED

MAY 31 2002

MEMORANDUM OPINION

This cause of action comes to be heard upon defendant Pacific Keystone Technologies, Inc.'s ("PKT") Motion(s) for Partial Summary Judgment filed on September 27, 2001,¹ and plaintiff RF Delaware, Inc.'s ("RFD") Motion(s) for Partial Summary Judgment filed on November 2, 2001.²

PARTIES

RFD is a Delaware holding company having an address of 103 Foulk Road, Suite 202, Wilmington, Delaware 19803.

PKT is a Washington corporation having a place of business located at P.O. Box 360, Black Diamond, Washington 98010-0491. Clear Water Technologies, Inc. ("CWT") is a

¹ PKT filed three Motion(s) for Partial Summary Judgment on September 27, 2001. It filed a Motion for Partial Summary Judgment of Noninfringement on the grounds that it has committed no act of infringement. It also filed a Motion for Partial Summary Judgment on the grounds that the patent claims do not cover equipment having sand monomedia on an underdrain which includes support gravel. Finally, PKT filed a Motion for Partial Summary Judgment on the grounds that the patent claims do not cover equipment having only sand monomedia in the upflow filter.

² RFD also filed three Motion(s) for Partial Summary Judgment. The motion(s) mirror PKT's previously filed motion(s) except that RFD also seeks a finding that its patents are valid and enforceable. This memorandum opinion will not address RFD's claims in its first motion for partial summary judgment that its patents are valid and enforceable. These claims will be addressed in a separate memorandum opinion and order or judgment.

Canadian corporation having a place of business at 14666- 64th Avenue, Building 200, Surrey, BC V3S 1X7. BCA Industrial Controls (1995) Limited ("BCA") is a Canadian corporation having a place of business at 14666 - 64th Avenue, Building 200 Surrey, BC V3S 1X7. Michael O'Connor ("O'Connor") is a Canadian citizen residing in Canada. Michael Morris ("Morris") is a United States citizen residing in Black Diamond, Washington.

FACTS AND PROCEDURAL HISTORY

RFD is the owner of certain patent rights relating to water filtration systems. In particular, RFD is the owner of U.S. Patent No. 5,314,630 ("630 patent") entitled "Systems and Method for Clarifying Liquids" which was issued on May 24, 1994.³ RFD is also the owner of U.S. Patent No. 5,198,124 ("124 patent") entitled "Upflow Filter and Method of Washing Same" which was issued on March 30, 1993.⁴

³ The '630 patent includes independent method Claim 1 and dependent method claims 2 through 7. Independent Claim 1 reads as follows:

In a method for clarifying water is a filter system wherein during a filtering mode step influent water is passed upwardly in a first zone through particulate filter media contained therein and then sequentially is passed downward through a second zone through second particulate media contained therein, and during a backwash mode step liquid is passed upwardly through said particulate filter media in both said first and second zones, the improvement which comprises:

(a) providing said particulate media with a filter layer in the form of solid particles having a specific gravity in excess of 2 and an effective size greater than 1 millimeter; and

(b) during backwashing of said first zone, causing a combination of air and liquid to flow upwardly through the filter layer with the liquid flow rate being less than the minimum fluidization velocity of the filter layer and with the air flow rate being in the range of approximately 1-9 Scfm/ft.².

⁴ The '124 patent includes independent Claims 1 and 7 and dependent method Claims 2 through 6 and 8 through 17. Claim 1 of the '124 patent reads as follows:

A method of washing an upflow filter between service runs, said upflow filter including a filter bed having a non-buoyant particulate media filter layer through which influent to be filtered is directed in an upward direction during each service run for causing floc in said influent to be retained in said layer, said method of washing including the steps of:

The '124 and '630 patents have previously been interpreted by the United States District Court for the Eastern District of Virginia. In that action, RFD pursued a civil suit against Infilco Degremont, Inc. ("IDI"), alleging that IDI's ADVENT water treatment system literally infringed its '630 and '124 patents. In the Order and Opinion entered by the Virginia court on July 7, 2000, the court construed Claim 1 of the '630 patent to require a multi-layered upflow filter.⁵ In the Order and Opinion entered by the Virginia court on July 20, 2000, the court construed Claim 1 of the '124 patent to require a multi-layered upflow filter.⁶

(a) directing a combination of air and liquid in an upflow direction through the filter layer with the velocity of the liquid being less than one-half the minimum fluidization velocity of the filter layer for disrupting only some floc retained in said layer during a previous service run, while leaving some floc attached to said particulate media in said filter layer; and thereafter

(b) directing only liquid in an upflow direction through the filter layer at a velocity less than one-half the minimum fluidization velocity of the filter layer for removing disrupted floc from the filter while leaving in said layer floc attached to said particulate media of said filter layer.

⁵ The court found that the invention claims to provide the following improvement to the prior art:

providing *said first particulate filter media* with a filter layer in the form of solid particles having a specific gravity in excess of 2 and an effective size greater than 1 millimeter;

(emphasis added in opinion). The court analyzed this language in the following manner:

"First particulate media" in this context operates as the object of the transitive verb, "providing" and receives into it the filter layer. "Filter layer" is that which is to be provided. The syntactical structure of this clause, then, indicates that the media and the filter layer are separately discernable entities, but that the media contains a filter layer.

The court also examined the word "layer" as used in the Specification. The court found that the word "delineates a part of the filtration system that has a discrete function." Specifically, the court stated:

Each layer – flocculation, transitional, and filtration – performs a different purpose, and, accordingly, each is composed of media specially suited for its purpose. The flocculation layer, for example, contains particles of a porosity and size that promotes flocculation without filtration. . . . Thus the term "layer" refers to the discrete area and substance in which a particular function takes place.

⁶ In arriving at this conclusion, the Virginia court analyzed Claim 1, Claim 7 and the Specification:

Here, Claim 1 does not expressly disclose multiple layers. Claim 7 and the specification, however, do disclose multiple layers. Claim 7 requires a filter layer and a flocculation layer. . . .

PKT makes and sells water filtration equipment. Specifically, PKT markets a water treatment system under the name KEY-PAC. There are two versions of the KEY-PAC. One version has a filtration/flocculation layer composed of non-buoyant sand that rests on top of a support layer of gravel. The gravel layer functions to support the filter layer above the nozzles of the underdrain to prevent the media in the filter layer from clogging the openings of the nozzles. The gravel layer also aides in distribution and flocculation. The other version simply has the non-buoyant sand filtration/flocculation layer. Both versions of the KEY-PAC use a combination upflow filter and downflow filter to filter water. The upflow filter performs the function of filtration and flocculation. During filtration, the unfiltered water travels upwardly through the upflow filter and then passes downwardly through the downflow filter. The upflow filter is backwashed in a two-step process. First, air and unfiltered water is directed through the nozzles of the underdrain and up through the upflow filter. Then, unfiltered water is passed through the upflow filter by itself.

The KEY-PAC system is designed and manufactured in its entirety by PKT, according to predetermined features and specifications, prior to installation. PKT offers a one-year warranty on the system if it is operated and maintained according to predetermined specifications. PKT does not assemble or operate these water treatment systems. Instead, PKT ships the filtration systems to its purchasers' job sites where they are assembled and installed by others. PKT provides the operator of the KEY-PAC system with a manual outlining the proper maintenance and operation of the equipment. It then trains the operator, starts up the plant, and verifies the quality of the water treated by the system. The KEY-PAC filtration system has been assembled

Repeatedly, in various ways, the specification describes the preferred embodiment of the invention as including a filter bed that has a filter layer and a flocculation layer.

and installed at the following locations: Warren Springs, Alabama; Canyon Lake, Texas; Arlington, Washington; Fort Stanton, New Mexico; Wilamina, Oregon; Millport, Alabama; Toyah, Texas; and Waterloo Springs, Alabama.⁷ In addition to these installations, PKT owns and operates a pilot plant that emulates the KEY-PAC system.⁸

On January 2, 2001, PKT received a letter from RFD notifying it of possible infringement of RFD's '630 and '124 patents. The equipment installed and assembled at the eight locations was sold and shipped by PKT prior to January 2, 2001. After receiving notice of RFD's patents, PKT serviced equipment at the Waterloo facility on one occasion to confirm that it was operational. The president of PKT, Mr. Morris, has provided technical assistance for at least two installations utilizing the KEY-PAC system subsequent to January 2, 2001. Additionally, PKT shipped a KEY-PAC system to Fishhawk Lake, Oregon, after January 2, 2001.⁹

On February 6, 2001, RFD filed a civil action in this court against PKT and the North East Alabama Water, Sewer & Fire Protection District ("District").¹⁰ RFD's complaint that the District and PKT infringed the '630 and '124 patents.¹¹ Specifically, RFD alleged that PKT in making, marketing, selling, and using its KEY-PAC water treatment system infringed the '630

⁷ The filtration system has also been installed at Imperial Valley, California. That system is not operational at this time.

⁸ PKT has operated the pilot plant specific to the KEY-PAC system at the following sites: Elk City, Idaho; Metaline Falls, Washington; Canyon Lake, Texas; and Arlington, Washington. PKT has operated the pilot plant in both filtration and backwashing modes.

⁹ This installation is presently operational.

¹⁰ By order dated June 26, 2001, this court, on RFD's motion, dismissed with prejudice RFD's causes of action against the District.

¹¹ The claims involving the '630 and '124 patents are method claims.

and '124 patents in violation of 35 U.S.C. § 271. Additionally, RFD alleged that the District infringed the '630 and '124 patents by using the KEY-PAC water treatment system. In its Answer and Counterclaim of Defendant Pacific Keystone Technologies, Inc. filed on March 16, 2001, PKT denied that it infringed the '630 and '124 patents. PKT counterclaimed seeking a declaration from this court that the '630 and '124 patents are invalid and have not been infringed by PKT.¹² PKT also sought an award of attorney fees under 35 U.S.C. § 285 because of the exceptional nature of the case due to RFD's assertion of the patents against PKT allegedly in bad faith.

On September 17, 2001, RFD filed a First Amended Complaint. In the amended complaint, RFD named CWT, BCA, O'Connor, and Morris as additional defendants. Specifically, RFD alleged that these defendants induced or contributed to the patent infringement by making, using, selling, offering for sale, marketing, piloting and/or servicing the KEY-PAC water treatment system.¹³ In its Answer and Counterclaim of Defendant Pacific Keystone Technologies, Inc. to First Amended Complaint filed on October 22, 2001, PKT denied that its actions infringed the '630 and '124 patents. PKT stated as affirmative defenses that RFD is barred from asserting the '630 and '124 patents against it because the patents are invalid and void by reason of failure to comply with the requirements for patentability specified in Title 35 of the United States Code. Additionally, PKT alleged that RFD is barred from asserting the patents against it because the patents are unenforceable by reason of inequitable conduct

¹² None of PKT's motions for summary judgment address the issue of invalidity.

¹³ In Count I of the First Amended Complaint, RFD alleged that the actions of CWT, BCA, Morris, and O'Connor induced or contributed to the infringement of the '630 patent. In Count II, RFD alleged that actions of CWT, Morris, and O'Connor induced or contributed to the infringement of the '124 patent.

committed by R. Lee Roberts (“Roberts”) and Annabelle Kim (“Kim”) and the attorneys who filed and prosecuted the applications for such patents, particularly Martin L. Faigus (“Faigus”). Additionally, PKT counterclaimed against RFD by seeking a declaration from this court that the ‘630 and ‘124 patents are invalid and have not been infringed.¹⁴

PKT filed three Motion(s) for Partial Summary Judgment on September 27, 2001. Likewise, RFD filed three Motion(s) for Partial Summary Judgment on November 2, 2001. Their respective motion(s) will now be addressed in turn.

ARGUMENTS

PKT argues that it is entitled to partial summary judgment in this action for three reasons. First, it contends that it is entitled to partial summary judgment on the grounds that it has committed no act of infringement. Second, it argues that it is entitled to partial summary judgment because the patent claims do not cover equipment having only sand monomedia in the upflow filter. Finally, PKT asserts that it is entitled to partial summary judgment because the patent claims do not cover equipment having sand monomedia on an underdrain which includes support gravel.

RFD also argues that it is entitled to partial summary judgment for three main reasons. First, it argues that it is entitled to partial summary judgment on the ground that PKT willfully infringed its ‘124 and ‘630 patents. Second, it argues that it is entitled to partial summary judgment on the ground that the KEY-PAC package water treatment plant having a non-buoyant filter layer composed of sand in the upflow filter infringes Claims 1 through 4 of the ‘124 patent

¹⁴ In addition, PKT requested that this court enter a finding that RFD asserted the patents against PKT in bad faith, that each of the patents are unenforceable by reason of inequitable conduct and that this case is therefore exceptional under 35 U.S.C. § 285 because of such bad faith and inequitable conduct. PKT requests that this court award its reasonable attorneys’ fees under 35 U.S.C. § 285 by reason of the exceptional nature of the case.

and Claims 1 through 4, 6 and 7 of the '630 patent under the doctrine of equivalents. Finally, it seeks partial summary judgment on the ground that the KEY-PAC package water treatment plant having a non-buoyant filter layer composed of sand and a gravel support layer in the upflow filter literally infringes Claims 1 through 4 of the '124 patent and Claims 1 through 4, 6 and 7 of the '630 patent.

No Infringement of Patents

PKT's Motion for Summary Judgment

Turning to the first ground for summary judgment, PKT argues that it is entitled to judgment as a matter of law because it has committed no act of infringement. PKT states that there are three ways in which a patent can be infringed: directly, active inducement, and contributorily. *See* 35 U.S.C. § 271. Thus, in order to avoid summary judgment, PKT notes, RFD must proffer evidence that PKT has committed an act of infringement. PKT argues that RFD cannot satisfy this essential element because it cannot demonstrate that PKT has infringed the '630 and '124 patents either directly, by active inducement, or contributorily.

According to PKT, the claims of infringement regarding the '630 and '124 patents are method claims. Thus, the patents could only be directly infringed by someone who actually carries out the method that is patented: "A method claim is directly infringed only by one practicing the patented method." *Joy Tech., Inc. v. Flakt, Inc.*, 6 F.3d 770, 775 (Fed. Cir. 1993). PKT argues that it does not operate the equipment and therefore it has not practiced the patented method. Furthermore, it contends that its sales of the equipment cannot legally be an act of direct infringement: "The law is unequivocal that the sale of equipment to perform a process is not a sale of the process within the meaning of Section 271(a)." *Id.*

PKT also argues that it did not infringe the patented method by active inducement.

According to PKT, active inducement requires proof that (1) PKT had actual knowledge of the patents in suit and (2) while having such knowledge actually intended to induce the infringement by another. PKT contends that it could not have infringed the patents by active inducement because it committed no acts that could be construed as inducement after January 2, 2001, when PKT first became aware of the patents in question. In support of this proposition, PKT cites this court to *Insituform Technologies v. Cat Contracting*, 161 F.3d 688, 695 (Fed. Cir. 1998) (holding that there was no inducement as a matter of law “because all accused acts by [the defendant] occurred before [the defendant] knew of the patent. A crucial element of induced infringement is that the inducer must have actual or constructive knowledge of the patent.”).

Next, PKT notes that the only other potential way for it to be liable is if it contributorily infringed RFD’s patents. *See* 35 U.S.C. § 271(c). PKT argues that because RFD’s patent claims are limited to processes, there can be liability only if the equipment PKT has sold is “a material or apparatus for use in practicing a patented process” and, when it was sold, PKT knew that it “was especially made or especially adapted for use in an infringement.” *Id.* Since all sales of PKT equipment were allegedly made before it was aware of RFD’s patents, PKT argues that its lack of knowledge negates liability for contributory infringement as a matter of law. *See Dynamis, Inc. v. Leepoxy Plastics, Inc.*, 831 F. Supp. 651, 655 (N.D. Ind. 1993) (“[The] focus in a contributory infringement claim is on whether the accused infringer knows that the intended use of the product will infringe a known patent.”).

Finally, PKT asserts that its act of servicing its equipment sold prior to its awareness of RFD’s patents is not infringement. PKT notes that it serviced the Waterloo Springs, Alabama installation after it became aware of RFD’s patents. PKT contends that this act does not amount to patent infringement as a matter of law. In support of this proposition, PKT relies on *Fonar*

Corp. v. General Electric Co., 107 F.3d 1543 (Fed. Cir. 1997). According to PKT, the defendant in *Fonar* continued “to service scanners that it sold before receiving notice of the patent.” *Id.* at 1554. PKT states that the *Fonar* court accepted the defendant’s position that “there is no liability for inducement to infringe where the original purchaser had a right to repair and service the scanners.” *Id.* Thus, the court found that “[i]f a machine was sold under circumstances that did not subject its sellers to damages, then subsequent repair cannot subject it to damages. One is entitled to repair that which is sold free of liability for infringement.” *Id.* at 1555. In light of *Fonar*, PKT argues that its servicing of the Waterloo Springs installation does not constitute infringement because the equipment was sold before PKT was aware of RFD’s patents.¹⁵

RFD asserts two responses. RFD initially argues that this court should give little weight to the PKT’s reliance on the declaration of its president, Michael Morris. RFD claims that Mr. Morris’ declaration is false in a number of material ways. First, RFD contends that Mr. Morris falsely represented to this court that “PKT only makes and sells the accused equipment and does not operate it.” In support of this proposition, RFD notes that Mr. Morris admitted that “[a]t installation, PKT provides the operator of the unit with an manual outlining the proper maintenance and operation of the equipment.”¹⁶ Additionally, RFD points out that PKT owns and operates a pilot plant that is specific to the KEY-PAC package water treatment plant. RFD asserts that this pilot plant is designed to filter water and is operated in both the filtration mode and the backwashing mode.

¹⁵ PKT notes that even if liability can be based on servicing the Waterloo Springs installation, no other equipment has been serviced by PKT after RFD’s patents became known. Therefore, PKT argues that at the very least it is entitled to summary judgment of noninfringement as to all other accused installations.

¹⁶ RFD claims that PKT has committed acts of direct infringement of both the ‘124 and the ‘630 patents at each and every installation of the KEY-PAC package water treatment plant through training and start up at each site.

Second, RFD contends that Mr. Morris has also falsely stated that “[s]ubsequent to January 2, 2001, when PKT first became aware of RFD’s patents, PKT has committed no acts in connection with the accused equipment. . . .” In support of this assertion, RFD states that Mr. Morris testified that he provided technical assistance for at least two installations of the KEY-PAC system in 2001. Further, RFD points out that Mr. Morris has conceded that his declaration was false because he omitted a KEY-PAC package plant that was sold and started up after this lawsuit was filed. Additionally, RFD notes that Mr. Morris failed to inform the court of the ongoing warranties that PKT had for the installations listed in paragraph 6 of his declaration.¹⁷

Third, RFD claims that Mr. Morris falsely asserts that PKT did not have actual knowledge of the patents-in-suit until January 2, 2001. RFD contends that Mr. Morris had knowledge of the patents-in-suit no later than November of 1999 when he learned that one of his competitors, IDI, had been sued by RFD for patent infringement based on the operation of the ADVENT package water treatment plant having an upflow and downflow filter. RFD also states that Mr. Morris was informed by IDI that PKT was likely to be sued by RFD on these very patents.

Finally, RFD argues that Mr. Morris made the following statement without any factual basis: “Subsequent to January 2, 2001 when PKT first became aware of the RFD patents, PKT has not committed any acts that have induced infringement by any customers of the accused equipment listed in paragraphs 6 and 7.” In support of this proposition, RFD states that Mr. Morris conceded during his deposition that he has no knowledge of what acts constitute induced

¹⁷ RFD claims that this omission is significant because the warranties predispose the operator “to follow the operation and maintenance procedures outlined in the manual without exception for at least the first year in order to maintain the warranty on their plant which represents a major investment.”

infringement.

Turning to its second response, RFD argues that PKT's reliance upon *Fonar* in an attempt to excuse the admitted acts of PKT occurring after January 2, 2001 is misplaced. RFD contends that *Fonar* deals with a case in which the patentee failed to mark the patented product with the patent number as required by 35 U.S.C. § 287. According to RFD, *Fonar* is inapplicable for two reasons. First, this is not a failure to mark case because the patents at issue are method patents that do not require marking. Second, RFD claims that PKT has committed acts of direct infringement and not merely repair by performing the patented washing and filtration processes.

In reply, PKT argues that it has not directly infringed the patents-in-suit. First, it contends that its pilot plant does not directly infringe the patents because it is a small scale, non-commercial testing unit used to determine whether or not a particular treatment process can be used. It claims that it operates the pilot plant to test water and that this activity is not the same as operating the commercial products that are accused of infringement.¹⁸ Second, it argues that its alleged start up assistance does not amount to direct infringement. PKT claims that the start up assistance is not provided by PKT but by another defendant, BCA.¹⁹ Furthermore, PKT contends that start up work does not involve operating the PKT equipment to carry out the patented methods. In support of this proposition, PKT states that the '124 and '630 patents describe the patented method in the very first line in the "Abstract" on the front face of the

¹⁸ PKT notes that to the extent that the pilot testing is relevant, it was only done at two of the sites at which a commercial installation was later installed: Arlington, Washington and Canyon Lake, Texas.

¹⁹ PKT asserts that all personnel involved in start up assistance are paid and employed by BCA. It claims that it is not present at start up.

patent as “[a] method of washing an upflow filter between service runs.” It claims that a “service run” involves operation of the filter to produce water that is used by customers. Thus, PKT argues that start up work does not involve “service runs” because it does not involve producing water that is used by anyone. Consequently, PKT claims that start up does not involve the patented method.²⁰

PKT also replies that it has not contributorily infringed the patents because there have been no sales of the KEY-PAC system since RFD notified it of the patents and the alleged infringement. Relying on *Trell v. Marlee Electronics Corp.*, 912 F.2d 1443, 1447 (Fed. Cir. 1990), PKT states that “the knowledge requirement of Section 271(c) limited an alleged contributory infringer’s liability to sales made after it received a letter from the patent holder informing it of the existence of the patent.” PKT claims that it is undisputed that RFD first notified PKT of the patents after January 2, 2001.²¹ It contends that there can be no contributory infringement because eight of the nine accused PKT installations were sold and shipped prior to January 2, 2001.²²

Finally, PKT replies that there has been no active inducement of the patents because it did not have actual knowledge of the patents prior to January 2, 2001. Relying on *Young v. Dental Manufacturing Co. v. Q3 Special Products, Inc.*, 891 F. Supp. 1345, 1348 (E.D. Mo. 1995), PKT states that “the accused infringer must be shown to have had actual knowledge of

²⁰ PKT claims that it is disqualified from operation because one has “to be certified by the state in which that plant is operated to be an operator and to operate the plant.” It contends that using the equipment other than to produce potable water to customers is merely testing, not operation.

²¹ PKT argues that *Marlee* expressly limits liability to the period after there is notice given by the patent holder. Thus, any argument by RFD that PKT had notice by other means is unpersuasive.

²² As for the ninth installation located at Imperial Valley, California, PKT notes that it is not operational at this time and, therefore, there can be no infringement as to it.

the patent and the actual intent to induce the infringement.” PKT claims that RFD has not demonstrated that PKT had actual knowledge of the patents prior to January 2, 2001. First, it notes that Mr. Morris testified that his discussions with IDI were “not specifically, to the patent, no.” It claims that Mr. Morris only knew that RFD had made infringement allegations as to IDI’s equipment. Next, PKT argues that Mr. Morris could not have known that PKT’s system had any relation to the RFD patents simply because the PKT and IDI equipment both used sand. PKT also argues that RFD’s assertion that PKT had actual knowledge of the RFD patents “through its discussions with IDI and WesTech” is meritless. PKT notes that RFD’s evidence in support of this assertion is Mr. Morris’ testimony in which he denied discussing the patent with IDI.²³ Additionally, PKT asserts that RFD’s allegation that PKT received actual knowledge through a sales representative, EMA Marketing, is incorrect. PKT explains that RFD’s evidence in support of this allegation is correspondence between EMA and RFD that is not directed to PKT and does not mention PKT. Finally, PKT argues that RFD assertion that it had actual notice through its President, Michael O’Connor is unavailing. PKT contends that the Canadian documents that RFD relies upon for this assertion have nothing to do with the U.S. patents, and certainly have nothing to do with actual knowledge by PKT of the RFD patents.

PKT also replies that it has not actively induced infringement of the ‘630 and ‘124 patents after January 2, 2001. First, it argues that RFD erroneously relies on *Water Technologies* and *Oak Industries* to show that training operators and providing manuals is active inducement. PKT states that in both cases, the acts alleged to constitute inducement occurred after the

²³ PKT does state that Mr. Morris testified that he received information from WesTech at the end of 2000. However, it asserts that this actual knowledge of RFD’s patents came only days before RFD’s letter of January 2, 2001.

defendants had knowledge of the patents. In contrast, PKT argues that it trains and furnishes manuals at start up, and all of the PKT installations were installed and started up before PKT had knowledge of the patents. Second, it contends that RFD erroneously relies on *Mendenhall* to demonstrate that its “ongoing warranties” constitute induced infringement. PKT claims that in both cases, the accused infringer, after it had actual knowledge of the patent, took active steps to induce infringement. In contrast, PKT states that the warranties were issued at start up and that it took no active steps regarding the warranties after it had actual knowledge of RFD’s patents. Finally, PKT contends that the “jar testing” performed by Mr. Morris at the Millport installation was only a test to verify water quality. It also claims that Mr. Morris visited the Arlington installation at a time before PKT had actual knowledge of the patents. Since these trips were essentially for public relations, PKT argues, Mr. Morris took no actions to actively induce infringement of RFD’s patents.

RFD’s Motion for Summary Judgment

RFD argues that it is entitled to summary judgment for three reasons. First, it claims that PKT has directly infringed the patents-in-suit. Second, it contends that PKT is liable for induced infringement. Finally, it asserts that PKT is liable for contributory infringement.

Turning to its first argument, RFD asserts that PKT has directly infringed the patents-in-suit because Mr. Morris has admitted that at each installation PKT “trains the operator, starts up the plant and verifies the quality of the water treated by the equipment.” RFD claims that training would require PKT to show the operator how to run the package plant in both filtration and backwash mode. Additionally, RFD notes that the start up process is extremely involved and includes PKT running the package plant in both filtration and backwashing mode in an

infringing manner.²⁴

RFD also argues that PKT is liable for the act of induced infringement. In support of this proposition, RFD claims that PKT had actual notice of the patents-in-suit as early as November of 1999.²⁵ RFD contends that not only did PKT know that RFD had patents and had asserted them against a very similar product of a competitor, PKT believed that it was likely to be sued next.²⁶ Despite having notice of the patents-in-suit, RFD contends, PKT did nothing with regard to its product. RFD also argues that other elements of induced infringement are satisfied because PKT provided the operators with a manual outlining the proper maintenance and operation of the equipment, PKT trained the operators, and PKT's warranty requires the operator "to follow the operation and maintenance manual procedures outlined in the manual without exception for at least the first year in order to maintain the warranty on their plant which

²⁴ RFD also states that PKT's reliance on *Fonar* to excuse its acts of direct infringement occurring at the Waterloo Springs site after January 2, 2001 is meritless. For stated reasons, *see supra* p. 12.

²⁵ RFD alleges that the following deposition testimony of Mr. Morris affirms this proposition:

Q. (By Mr. Merek) Did you have any discussions with anyone at Infilco Degremont, Inc. . . . concerning any of the three patents identified there [i.e., the patents-in-suit]?

A. (By Mr. Morris) Not specifically, to the patent, no.

Q. (By Mr. Merek) Generally about any lawsuit between IDI and my client?

A. (By Mr. Morris) Yes.

Q. (By Mr. Merek) Who did you have discussions with?

A. (By Mr. Morris) Talked to Vern Lucy. And I honestly can't remember. There was one other gentleman.

Q. (By Mr. Merek) When did you have your discussions with Mr. Lucy?

A. (By Mr. Morris) I can't give you a date, but it was a couple of years ago when you were first involved with a suit. Vernon told me that you were involved with the suit, but gave me very little details.

Q. (By Mr. Merek) Did you understand at that time that the Advent, IDI's packaged treatment plant, was alleged to have infringed my client's patents?

A. (By Mr. Morris) I understand it was alleged, yes. To infringe.

Q. (By Mr. Merek) You understand that a couple of years ago when the suit was originated?

A. (By Mr. Morris) I understood that.

²⁶ To support this assertion, RFD notes that Mr. Morris stated the following: "As IDI had been sued by RFD under the '124, '630 and '808 patents and RFD had threatened suit against Westech under the same patents, I, and other PKT personnel, took these indications that PKT was likely to be next very seriously."

represents a major investment. *Citing Water Tech., Corp. v. Calco, Ltd.*, 850 F.2d 660, 668 (Fed. Cir. 1988); *Oak Indus., Inc. v. Zenith Elec. Corp.*, 726 F. Supp. 1525, 14 USPQ 2d 1417, 1430-31 (N.D. Ill. 1989); *Mendenhall v. Astec Indus. Inc.*, 1988 U.S. Dist. LEXIS 17603 (E.D. Tenn. 1988).

Finally, RFD argues that PKT is liable for contributory infringement. As with its claim for induced infringement, RFD asserts that PKT had actual notice of the patents-in-suit as early as November of 1999.²⁷ RFD also contends that other elements of contributory infringement are satisfied. In support of this proposition, RFD states that PKT sells an apparatus for use in practicing the patented methods of washing and filtration which constitutes a material part of the invention. RFD comments that Mr. Morris has acknowledged that the KEY-PAC is specially designed and manufactured by PKT. RFD further states that the plant operators have little or no control over the units from the time the predetermined specifications of the plant are established up through the first year of operation. Thus, RFD claims that PKT has contributed to the direct infringement by others as a matter of law.

In response, PKT again argues that it has not willfully infringed RFD's patents because it committed no acts of infringement after it had actual notice of RFD's patents. According to PKT, "[w]illful infringement must be established by clear and convincing evidence." *Citing Pall Corp. v. Micron Separations, Inc.*, 66 F.3d 1211, 1221 (Fed. Cir. 1995). Additionally, PKT states that it is only when "a potential infringer [has] actual notice of another's patent" that it "has an affirmative duty of care" *Citing Minn. Min. and Mfg. v. Johnson & Johnson*, 976

²⁷ RFD claims that PKT had notice prior to January 2, 2001 through its discussions with IDI and Westech, through its sales representative, EMA Marketing Inc., and from its director Michael O'Connor. Despite this notice, RFD contends, PKT did nothing regarding its product for over a year. RFD argues that PKT's failure to act clearly constituted a breach of its affirmative duty of care.

F.2d 1559, 1580 (Fed. Cir. 1992). PKT argues that RFD's stated alleged reasons why PKT had actual notice are meritless.²⁸ In any event, PKT asserts, it has received timely legal opinions that justify its belief that there is no liability for infringement due to PKT marketing its products. *Relying on Braun, Inc. v. Dynamics Corp.*, 975 F.2d 815, 822 (Fed. Cir. 1992) ("On-going consultation with a patent lawyer is highly probative evidence of good faith."); *Electro. Med. Sys. S.A. v. Cooper Life Sciences*, 34 F.3d 1048, 1056 (Fed. Cir. 1994) (providing that an opinion of counsel is an important consideration negating willfulness).

In reply, RFD again argues that it is clear that Morris had actual notice of the '124 and '630 patents no later than November 1999 due to his knowledge that RFD had asserted that IDI's ADVENT packaged water treatment plant infringed RFD's patents. Additionally, RFD notes that PKT did not have to have copies of the patents to have actual notice of them. Relying on *Great Northern Corp. v. Davis Core & Pad Co.*, 782 F.2d 159, 165 (Fed. Cir. 1986), RFD states that actual notice is significant because it triggers PKT's obligation to seek an opinion of counsel. Since PKT waited until 2001 to seek an opinion of counsel, RFD concludes that it breached its duty of care.

Claims Covering Equipment Having Only Sand Monomedia in the Upflow Filter

PKT's Motion for Partial Summary Judgment

PKT makes two primary arguments that it is entitled to partial summary judgment that there is no infringement of either the '630 or '124 patents with respect to the installations at Warren Springs, Alabama; Canyon Lake, Texas; Arlington, Washington; Millport, Alabama; and Imperial Valley, California, because the equipment sold to these installations has only sand

²⁸ For stated reasons, *see supra* pp. 13-14.

monomedia in the upflow filter. First, it argues that the federal court in Virginia has interpreted the '630 and '124 patents as requiring a multi-layered upflow filter; and, consequently, the doctrine of collateral estoppel requires this court to apply the holding of the Virginia court that neither patent is literally infringed by equipment having only a monomedia sand filter. Second, it contends that there is no infringement under the doctrine of equivalents.

Focusing on the first argument, PKT asserts that in prior litigation between RFD and IDI, the federal court in Virginia interpreted the '630 and '124 patents as requiring a multi-layered upflow filter. Specifically, the district court analyzed the '630 patent claim and held that "the '630 patent requires a multi-layered upflow filter." *RF Delaware, Inc. v. Infilco Degremont, Inc.*, No. 2:99CV1847, at 24 (E.D. Va. July 7, 2000). Additionally, the district court in a separate order interpreted the '124 patent as follows: "Claim 1 of the '124 patent requires multiple layers." *RF Delaware, Inc. v. Infilco Degremont, Inc.*, No. 2:99CV1847, at 10 (E.D. Va. July 20, 2000).²⁹ PKT argues that RFD is bound by the claim interpretation of the Virginia court. *See TM Patents LP v. Int'l Bus. Mach.*, 72 F. Supp. 2d 370, 379 (S.D.N.Y. 1999). Furthermore, PKT states that RFD is bound by the summary judgment entered by the Virginia court that neither patent is infringed by equipment having only a monomedia sand filter. *See Aqua Marine Supply v. Aim Mach., Inc.*, 247 F.3d 1216, 1221 (Fed. Cir. 2001). In light of the holdings by the Virginia court, PKT contends that it is entitled to partial summary judgment because its equipment at the five installations has only a single grade of sand as the filter media. PKT states that the media at these installations is the same as the media held not to infringe RFD's patents in the Virginia case.

²⁹ In both orders, the district court granted summary judgment on the issue of literal infringement because the filter in dispute was not a multi-layered filter.

Turning to the second argument, PKT asserts that partial summary judgment is appropriate because there is no infringement under the doctrine of equivalents. According to PKT, the Virginia court ruled that there was a fact issue as to infringement of the '630 patent under the doctrine of equivalents. *See RF Delaware, Inc. v. Infilco Degremont, Inc.*, No. 2:99CV1847, at 25 (E.D. Va. July 7, 2000). However, PKT argues that summary judgment is appropriate in this case because there has been intervening case law from the Federal Circuit that negates the applicability of the doctrine of equivalents. According to PKT, the Federal Circuit squarely held in *Festo Corporation v. Shoketsu Kinzoku Kogyo Kabushiki*, 234 F.3d 558 (2000) that "a narrowing amendment made for any reason related to the statutory requirements for a patent will give rise to prosecution history estoppel with respect to the amended claim element." *Id.* at 566. Additionally, PKT notes that the court stated that "when a claim amendment creates prosecution history estoppel with regard to a claim element, there is no range of equivalents available for the amended claim element. Application of the doctrine of equivalents to the claim is completely barred (a 'complete bar')." *Id.* at 569.

Applying *Festo*, PKT argues that the claim element of a "multiple layer upflow filter" was the subject of a narrowing amendment in both RFD patent applications made for a reason related to the statutory requirements for patentability; thus, prosecution history estoppel attaches to it. Specifically, PKT notes that the '630 patent filter was described in initial Claim 1 as an upflow filter which includes a filter bed having a particulate media filter layer. PKT states that this description was unpatentable subject matter that had been rejected in RFD's parent application, U.S. Patent No. 5,080, 808 ("808 patent"). Therefore, PKT states, RFD narrowed the description from "particulate media filter layer" to "first particulate media" provided with a separate "filter layer." PKT argues that this amendment narrowed the description of the multiple

layered upflow filter which is the very claim element absent from PKT's equipment. It also asserts that the narrowing amendment was made to comply with the statutory requirement of novelty. Thus, under *Festo*, PKT contends that "there is no range of equivalents available for the amended claim element. Application of the doctrine of equivalents to the claim element is completely barred." *Id.*

PKT also argues that the situation is the same for the '124 patent. PKT contends that RFD filed a Preliminary Amendment to narrow the '124 patent because the initial claim of the '808 parent application was unpatentable and rejected. PKT states that amendment to Claim 1 of the '124 patent addressed the multiple layered upflow filter. It notes that the velocity through the multiple layered upflow filter was narrowed from just being "less than the minimum fluidization velocity" before the amendment to "less than one-half the minimum fluidization velocity" after the amendment. PKT argues that the description of the multiple layered filter was unquestionably narrowed by the reduction in the fluidization velocity in the filter. Consequently, it contends that *Festo* makes the doctrine of equivalents inapplicable to the multiple layered upflow filter in these circumstances.³⁰

In conclusion, PKT notes that even if the doctrine of equivalents were available, there is no infringement of the '630 and '124 patents because RFD cannot prove that a monomedia sand filter is equivalent to the multiple layered filter required by the patents. PKT argues that a single layer monomedia filter is the opposite of the multiple layered filter that the patent claims require. Consequently, PKT states that it is entitled to partial summary judgment as to the five

³⁰ PKT also notes that an independent claim was added to the '124 patent through the Preliminary Amendment. According to PKT, the independent claim added the limitations of a "particulate media filter layer" and a separate "static flocculation layer." PKT argues that this addition demonstrates that the '124 patent expressly requires a multiple layered upflow filter.

installations that utilize only sand monomedia in the upflow filter.

RFD makes two primary arguments in response. First, it argues that both parties' experts agree that a single layer upflow filter that performs multiple functions (i.e., filtration and flocculation) is the equivalent of the claimed invention(s) of the patents-in-suit. RFD contends that PKT's expert, Mr. Richard Beverly ("Beverly"), has testified that an upflow filter having a single layer of non-buoyant, natural media was in fact the full functional equivalent of the claimed invention. It also asserts that the expert further testified that an upflow filter having a single layer of non-buoyant, natural media performs substantially the same function, in substantially the same way, to achieve substantially the same results. Likewise, RFD argues, its expert, Dr. Letterman, has testified in his declaration that equivalence exists.

Second, RFD argues that PKT's reliance on *Festo* is misplaced. According to RFD, *Festo* requires that there be a narrowing amendment of the very limitation for which equivalence is sought. Additionally, it contends that *Festo* dictates that the narrowing amendment must have been made for reasons of patentability, not merely because the patentee wanted to vary the scope of his or her patent protection. RFD notes that it only seeks a finding of equivalent infringement for a second layer of media. It states that at no point did it amend the second layer of media. For this reason, RFD claims that *Festo* does not apply as a matter of law. Additionally, RFD argues that *Festo* does not apply because the only change to Claim 1 of the '124 patent, dictated by the amendment found in Claim 1 of the '808 patent, was specifically directed to the limitation regarding the velocity of the liquid during the backwashing procedure. RFD notes that it is not seeking a finding of equivalence on this limitation and, thus, *Festo* is inapplicable.

PKT asserts three arguments in reply. First, it contends that the singular cannot be equivalent to the plural. PKT states that the Virginia court interpreted both patents as requiring

multiple layers in the upflow filter. PKT argues that it would defy logic to conclude that the single layer filter is equivalent to a multiple layer filter. *Relying on Moore U.S.A., Inc. v. Standard Register Co.*, 229 F.3d 1091 (Fed. Cir. 2000), *cert. denied*, 532 U.S. 1008 (2001) (“[I]t would defy logic to conclude that a minority - the very antithesis of a majority - could be insubstantially different from a claim limitation requiring a majority, and no reasonable juror could find otherwise.”).

Second, PKT claims that RFD’s alleged evidence of equivalence is irrelevant. It explains that it is fundamental that “the doctrine of equivalents must be applied to the individual elements of the claim, and not to the invention as a whole.” *Citing Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 29 (1997). PKT explains that the Letterman Declaration is irrelevant because the passages RFD relies upon have nothing to do with equivalence between a single layer and multiple layer filter.³¹

Finally, PKT repeats that the doctrine of equivalents is simply not available to RFD in these circumstances under *Festo*. According to PKT, *Festo* expressly states that “a narrowing amendment made for any reason related to the statutory requirements for a patent will give rise to prosecution history estoppel with respect to the amended claim element.” 234 F.2d at 566. PKT claims that the narrowing amendments made by RFD regarding its ‘124 and ‘630 patents relate to the “filter layer” limitation. It notes that the “velocity of the liquid” limitation made in a narrowing amendment for the ‘124 patent reads as follows: “with the velocity of the liquid being less than one-half the minimum fluidization velocity of the filter layer” and “directing only liquid in an upflow direction through the filter layer at a velocity less than one-half the minimum

³¹ PKT also notes that Dr. Letterman’s opinion is based on irrelevancies in a third party patent that is not involved in this action.

fluidization velocity of the filter layer.” PKT also states that the narrowing amendment for the ‘630 patent reads as follows: “with the liquid flow rate being less than the minimum fluidization velocity of the filter layer.” Since the narrowing amendments are directed specifically to the “filter layer,” PKT argues, the doctrine of equivalents is not available as a matter of law under *Festo*.

RFD’s Motion for Partial Summary Judgment

RFD makes three primary arguments in support of its position that it is entitled to partial summary judgment because the version of the KEY-PAC package treatment plant lacking a coarse gravel support layer infringes the ‘630 and ‘124 patents under the doctrine of equivalents. First, it argues that both parties’ experts agree that a package water treatment system having only a homogeneous media in the upflow filter performs substantially the same function, in substantially the same way, to achieve substantially the same result. Second, it argues that the *Festo* case cannot apply as a matter of law.³² Finally, RFD argues that overwhelming evidence demonstrates that a single layer filter that performs the functions of filtration and flocculation is interchangeable with a multiple layer filter.³³ Since these processes are interchangeable, RFD argues, the doctrine of equivalence has been satisfied.

In support of this final argument, RFD submits the following evidence. First, it submits the declaration of its expert, Dr. Letterman.³⁴ Second, RFD claims that PKT’s own web page

³² For reasons supporting RFD’s argument, *see supra* p. 22.

³³ According to RFD, interchangeability is the key element in determining infringement under the doctrine of equivalents.

³⁴ Dr. Letterman stated that “the interchangeability of a single layer upflow filter with a multiple layer upflow filter bed was known by those of ordinary skill in the water filtration industry no later than January 1, 1993.” Dr. Letterman testified that this assertion is demonstrated in IDI’s U.S. Patent No. 5,167,840 (“‘840 patent”): “The ‘840 patent expressly teaches the interchangeability of a multiple layer upflow filter bed and what

offers persuasive evidence because PKT offers for sale both versions of the KEY-PAC (i.e., with and without a coarse gravel support layer) without any restrictions on the use of either version. Third, RFD contends that IDI's '840 patent demonstrates interchangeability because the patent details, as of December 1, 1992, that a single layer upflow filter is interchangeable with a multiple layer upflow filter.³⁵ It also contends that IDI's '840 patent explains that a header and lateral underdrain is interchangeable with a nozzle underdrain.³⁶ Fourth, it notes that its settlement agreement entered into with IDI provides that IDI would discontinue making, using, and offering for sale the ADVENT package water treatment system in the United States by July 30, 2001. Fifth, it argues that the industry has recognized that the '630 patent covers an upflow filter having a homogeneous media. In support of this proposition, RFD asserts that the terms of its settlements that it entered into with Westech Engineering, Inc. ("Westech") and Pueblo Metropolitan District ("Pueblo District") demonstrate this industry recognition.³⁷ Sixth, RFD

PKT has referred to as a single layer or monomedia bed."

³⁵ RFD contends that the following language from the '840 patent supports this proposition:

In some embodiments, the first zone filter media is capped by a quantity of particular filter media of specific gravity less than 3.5 and/or size less than 1.5 mm. In such embodiments, the lighter or smaller media does not become unstable as a the bulk of removed solids are collected in the *lower layer* of the first zone media (emphasis added to original).

³⁶ RFD contends that the following language from the '840 patent supports this proposition:

Preferred distribution means for use in performing air scour is through evenly spaced nozzles (not shown) incorporating slots of sufficient size to prevent clogging, but small enough to exclude media particles. Header and lateral pipe means are also acceptable, but not preferred.

³⁷ RFD contends that the KEY-PAC water treatment plant is virtually identical to Westech's AQUA-CELL package water treatment plant. RFD argues that the following language from the settlement agreement demonstrates the similarity between the KEY-PAC and AQUA-CELL products:

6. The AQUA-CELL packaged water treatment plant includes an upflow and downflow filter. The upflow filter utilizes media that has an effective size greater than 1mm and a specific gravity greater than 2. The upflow filter is periodically backwashed. The AQUA-CELL packaged water treatment plant has used two backwash procedures. The

asserts that further support for its interchangeability argument is found in the testimony of Mr. Beverly. According to RFD, Mr. Beverly testified that one could take the media in RFD's system and put it in the upflow filter of IDI's ADVENT water treatment system and the upflow filter so modified would perform the function of a roughing filter. Seventh, RFD claims that a letter of Mr. O'Connor³⁸ to the Canadian Patent Office further supports its claim of interchangeability. RFD asserts that Mr. O'Connor states the following: "I would suggest that monomedia upflow filters have been around for decades, some using a screen, mesh or plenum to support the monomedia and some using a layer of gravel to support the mesh." Finally, RFD contends that testimony of Mr. Piper, IDI's former Chief Engineer, in which he testifies that header and laterals were known to be interchangeable with nozzles, is further evidence of interchangeability.

PKT makes two primary arguments in response.³⁹ First, PKT argues that a genuine issue of material fact exists regarding several crucial factual matters. PKT contends that various aspects of the "minimum fluidization velocity" claim limitations are in dispute as a factual matter. PKT also claims that a factual issue is present as to whether it infringes the limitation in the patent claims requiring that floc be intentionally left in the filter after washing. Next, PKT

first step is an air scour without an accompanying liquid. The second step is a liquid rinse. (hereinafter "FIRST BACKWASH PROCEDURE") The second backwash procedure is a two step process. The first is an air scour with an accompanying liquid. The second is a liquid rinse (hereinafter "SECOND BACKWASH PROCEDURE").

³⁸ Mr. O'Connor is the Chief Executive Officer of PKT's parent corporation, The Clearwater Group.

³⁹ Prior to these arguments, PKT asserts in its memorandum in opposition that RFD's motion(s) for summary judgment are premature. It argues that patent claims must be interpreted before a determination can be made of infringement. It submits that unless this court denies RFD's motion(s) on all grounds, this court should hold its decision on the motion(s) in abeyance until after the patent claims have been interpreted. *Relying on Palumbo v. Dan-Joy Co.*, 762 F.2d 969, 974 (Fed. Cir. 1985); *Smithkline Diagnostics, Inc. v. Helena Lab. Corp.*, 859 F.2d 878, 882 (Fed. Cir. 1988).

explains that the evidence submitted in the Letterman Declaration is irrelevant. PKT states that the information regarding its offering two water treatment plants on its web page is irrelevant because, at best, it is evidence of interchangeability of two different plants as a whole; *relying on Warner-Jenkinson*, 520 U.S. at 29 (“[T]he doctrine of equivalents must be applied to the individual elements of the claim, and not to the invention as a whole.”). PKT also asserts that RFD’s reliance on IDI’s ‘840 patent is irrelevant because the patent says nothing to suggest that a one layer filter is equivalent to a multiple-layer filter. PKT argues that RFD’s reliance on the IDI and Westech settlements is irrelevant because the settlements have no bearing on whether a single layer media is equivalent to a multiple layer media.⁴⁰ Additionally, PKT states that RFD’s reliance on Mr. Beverly’s testimony is misplaced. First, it notes that Mr. Beverly is not its expert and that RFD is relying on his testimony in a different suit (IDI litigation) between different parties. It claims that his testimony is inadmissible here because it was not present to cross-examine Mr. Beverly. PKT also states that the letter of Mr. O’Connor is irrelevant because he simply stated that various types of water filters have been available for a long time. Finally, PKT argues that the testimony of Mr. Piper is irrelevant because he simply “explained that header and laterals were known to be interchangeable with nozzles.” PKT claims that this statement is irrelevant because the alleged interchangeability between completely different components does not prove equivalence between a single layer filter and a multiple layer filter.

PKT further contends that there can be no infringement under the doctrine of equivalents by the single layer sand monomedia in the PKT upflow filter. In support of this argument, PKT

⁴⁰ PKT states that in the IDI settlement, IDI expressly stated that it disputed all of RFD’s claims and denied liability.

again asserts that the *Fesio* decision precludes application of the doctrine of equivalents.⁴¹

Additionally, PKT states that RFD must prove the incongruous proposition that a single layer filter is equivalent to a multiple layer filter. Finally, PKT claims that the Declaration of Mr. Morris establishes a factual issue about equivalence for two reasons. First, it claims that the Morris Declaration evidences that the classic equivalents test of function-way-result is not satisfied because the functions are substantially different, the ways in which the functions are performed are substantially different, and the results are substantially different. Second, it notes that the Morris Declaration provides that the PKT single layer in the upflow filter is not interchangeable with the RFD multiple layers.

In reply, RFD argues that PKT has not raised a genuine issue of material fact as to the issues of minimum fluidization velocity and intentionally leaving floc in the filter bed. RFD contends that the tests conducted by Dr. Lettermen clearly demonstrate that PKT's installations literally satisfy the minimum fluidization velocity claims. Also, RFD states that infringement is a "strict liability offense" and PKT's "intent" regarding the leaving of floc in the filter bed is irrelevant. *See Jurgens v. CBK, Ltd.*, 80 F.3d 1566 (Fed. Cir. 1993). Additionally, RFD notes that the Federal Circuit has rejected PKT's per se rule that one can never be the equivalent of two in *Dolly, Inc. v. Spalding & Evenflo Co., Inc.*, 16 F.3d 394, 398 (1994). *See also The Toro Co. v. White Consol. Indus., Inc.*, 266 F.3d 1367, 1370 (Fed. Cir. 2001). RFD also asserts that this argument is meritless because PKT has admitted that version one of the KEY-PAC having two layers of media in the upflow filter is only "slightly different" from version two of the KEY-PAC having only a single layer of sand. Finally, RFD argues that PKT's argument that

⁴¹ For stated reasons, *see supra* p. 23.

prosecution history estoppel precludes a finding of infringement as a matter of law is specious because RFD is seeking a finding of equivalent infringement for a second layer which was never amended during the prosecution history of the patents-in-suit. Thus, RFD concludes that PKT's reliance on *Festo* is misplaced.

Claims Covering Equipment Having Sand Monomedia on an Underdrain Which Includes Support Gravel

PKT's Motion for Partial Summary Judgment

PKT makes two primary arguments that it is entitled to partial summary judgment regarding the installations at Wilamina, Oregon; Waterloo Springs, Alabama; Toyah, Texas; and Fort Stanton, New Mexico, where the equipment only has a single layer sand monomedia on an underdrain which includes support gravel. First, it contends that RFD is bound by the interpretation given to the patent claims by the Virginia court. Thus, PKT asserts that there must be a multi-layered upflow filter for there to be infringement of the '630 and '124 patents.⁴² Since these installations only utilize sand monomedia on an underdrain which includes support gravel and do not utilize a multi-layered upflow filter, PKT argues that there is no literal infringement of RFD's patents.

To the contrary, PKT asserts that the support gravel in the equipment is not part of the upflow filter and performs no filtration or flocculation function. In support of this assertion, PKT cites this court to authoritative references from the water treatment field that state that support gravel is considered part of the underdrain and not part of the filter:

Support gravel is required when openings in the underdrain system are larger than the filter medium directly above it. Although the support gravel or other support method does not contribute to particulate removal, it aids in distributing wash

⁴² See *supra* p. 3.

water. For this reason, it should be considered part of the underdrain system.

American Water Works Association & American Society of Civil Engineers, *Water Treatment Plant Design* 171 (3d ed. 1998). PKT contends that RFD's counsel, Mr. Merek, has acknowledged that the gravel is only a "support layer" and that the sand layer "does the filtration." (Transcript of Preliminary Injunction Hearing at 31). Additionally, PKT argues that the co-inventor of the patents, Kim, agreed that the purpose of the support gravel is not to filter but "to prevent the layers of media on top of it from falling through." *Id.* at 345-46. Finally, PKT asserts that there is no flocculation in the gravel because the water passes through it in less than one second and it is recognized in the industry that it takes three to five minutes for flocculation to occur. *See Water Treatment Plant Design* at 107. Based on these assertions, PKT contends that support gravel is not part of the filter and, thus, the doctrine of collateral estoppel requires this court to hold that there has been no literal infringement involving the equipment with only a single layer sand monomedia on an underdrain which includes support gravel.⁴³

RFD has three main responses to these arguments. First, RFD notes that the 1998 article published by the American Water Works Association is a single piece of extrinsic evidence that is directly inconsistent with the intrinsic evidence stated in the Specifications section of the '630 and '124 patents. RFD states that the Specifications of the '630 and '124 patents instruct that support gravel is in fact a "filter media" as that phrase has been interpreted by the Virginia court. RFD also argues that the 1998 article is irrelevant to the issue of infringement because it refers to support gravel used in the downflow filter. According to one of RFD's experts, Dr. Letterman,

⁴³ PKT also asserts that there is no infringement under the doctrine of equivalents. *See supra* pp. 20-21.

unlike support gravel in upflow filters, support gravel in downflow filters plays no role in the filtration process, because the filtration process is completed prior to entry of the influent into the support gravel in the downflow filter. Additionally, RFD contends that the 1998 article is not relevant to the issue of infringement since it is limited to support gravel that prevents filtration particulate having a smaller size than the openings in the underdrain system from passing into the underdrain system and the filtration particulate of the KEY-PAC is larger than the openings in the underdrain system. Further, RFD argues that the 1998 article has no bearing on the infringement issue because it was published after the effective date of the '124 and '630 patents.

Second, RFD claims that PKT's interpretation of the phrase "filter media" is directly inconsistent with the Virginia court's prior ruling on the meaning of this phrase as used in the claims of the '630 patent. According to RFD, PKT contends that the phrase "filter media" only covers media that retains floc, i.e., filtration particulate. However, RFD claims that the Virginia court rejected this argument by stating that the term "filter media" was broad and encompassed any media which aided the filtration process. Consequently, RFD states that this ruling provides that the gravel layer is clearly filter media because it aids in the filtration process and is indistinguishable from the transitional particulate and/or flocculation particulate the Virginia court expressly held was "filter media."⁴⁴ Additionally, RFD argues that PKT's arguments fail as a matter of law because PKT's position on the meaning of the phrase "filter media" would not cover the "preferred embodiment of that patent." RFD contends that the preferred embodiment of the '630 patent requires an upflow filter consisting of a filter layer 56, a transitional layer 54,

⁴⁴ RFD notes that PKT has repeatedly referred to the media in the gravel layer as "filter media" in its own technical specifications for the KEY-PAC system.

and a flocculation layer 52. However, RFD points out that under PKT's definition of the phrase "filter media," the media in the transitional layer 54 and flocculation layer 52 would not qualify as "filter media." Thus, the claims of the '630 patent requiring two layers of filter media would not cover the preferred embodiment of the patent having only a single layer of filter media by PKT's definition.

Finally, RFD argues that the KEY-PAC system literally satisfies the minimum fluidization velocity requirements of the claims of the '124 and '630 patents.⁴⁵ RFD notes that minimum fluidization velocity is expressly defined by the formula in the patents. It asserts that PKT has not disputed that the KEY-PAC package water treatment plant satisfies the minimum fluidization using the formula in the patents.⁴⁶

PKT argues that RFD has presented no facts evidencing that the PKT support gravel is in the upflow filter.⁴⁷ PKT notes that RFD is the patent plaintiff and bears the burden of proving infringement.⁴⁸ *Citing Lemelson v. U.S.*, 752 F.2d 1538 (Fed. Cir. 1985). PKT argues that it is clear that there is no evidentiary support for RFD's claim that there are multiple layers in PKT's

⁴⁵ RFD notes that PKT did not raise this argument in its motion for partial summary judgment.

⁴⁶ RFD claims that because PKT cannot dispute that the minimum fluidization velocity requirement has been satisfied, it has attempted to persuade this court that the formula in the patents should not be used. RFD argues that because the patents expressly define minimum fluidization by the formula contained therein the formula must be used. *See Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1995).

⁴⁷ PKT notes that in a decision adverse to RFD, the Virginia court in the IDI litigation construed Claim 1 of the '630 patent as requiring "a multi-layered upflow filter." PKT also states that the Virginia court later construed claim 1 of the '124 patent as requiring "multiple layers." PKT contends that the Virginia court was addressing the upflow filter because it used the heading "Whether the Upflow Filter of Claim 1 of the '124 Patent is Multi-Layered." Furthermore, PKT claims that RFD has twice conceded in open court that it is the upflow filter itself that must have multiple layers in order for either patent to apply.

⁴⁸ PKT contends that RFD has conceded that there has been no infringement under the doctrine of equivalents. According to PKT, RFD's opposing memorandum opposes PKT's motion only on the grounds of literal infringement and fails to dispute that absence of infringement under the doctrine of equivalents.

upflow filter. First, PKT explains that Dr. Letterman's declaration does not contain any facts or even an opinion that the PKT support gravel is located in the upflow filter. Second, it claims that RFD's reliance on the specifications of its patents is misplaced because the patents do not provide evidence that the PKT support gravel is in the upflow filter. Likewise, PKT states that its "media specifications" and Mr. Hunter's testimony that RFD cites as evidence that the support gravel is "filter media" are irrelevant because they do not prove that the support gravel is located in the upflow filter.⁴⁹ Finally, PKT argues that the testimony of Mr. Piper that a third party did not use support gravel in its equipment is irrelevant because it does not demonstrate that PKT's support gravel is in the upflow filter.⁵⁰

RFD's Motion for Partial Summary Judgment

RFD argues that first version of the KEY-PAC (having a filter layer and gravel layer) literally infringes the '124 and '630 patents because the gravel layer is a layer of "filter media." RFD contends that PKT's two arguments to the contrary are meritless. First, RFD claims that PKT's position that the gravel layer is not "filter media" is erroneous for several reasons. RFD contends that PKT's own technical documents on the KEY-PAC expressly designate the gravel layer as media. RFD also claims that the specification of the gravel layer as "filter media" would be consistent with the Virginia court's interpretation of the phrase appearing in Claim 1 of the '630 patent.⁵¹ Additionally, RFD contends that a finding that PKT's gravel layer is in fact a

⁴⁹ PKT states that the "media specifications" actually inform the contractor how to install the support gravel to assure that it is installed in the underdrain where it belongs and not in the filter section.

⁵⁰ PKT concludes it reply brief by stating that RFD devoted its entire memorandum to irrelevant arguments as to the support gravel being "filter media." According to PKT, whether support gravel is "filter media" is irrelevant because it is not even in the upflow filter.

⁵¹ According to RFD, the Virginia court held that the preamble's phrase "first particulate media" refers "to filter media that could compromise filtration particulate, flocculation particulate, or transitional particulate." RFD

support layer is supported by testimony of Mr. Max Hunter, the general manager of a plant utilizing the KEY-PAC system. According to RFD, Mr. Hunter explained that the gravel layer in the KEY-PAC is similar to the support or transitional layer in RFD's system ("Pacer II") and that both layers primarily function to support the media in the filter layer of the respective units. Furthermore, RFD contends that under PKT's definition, Claim 1 of the '630 patent would not read on the preferred embodiment, i.e., would not cover the preferred embodiment of the patent having only a single layer of filter media.⁵² Finally, RFD argues that its position on the "filter media" issue is further supported by testimony of Mr. Piper. RFD states that Mr. Piper explained that IDI was having problems with the upflow filter of its commercial product, the ADVENT package water treatment plant. RFD claims that Mr. Piper issued a directive that no gravel support layer was to be added because it was feared such activity would infringe the RFD's patents. RFD argues that this testimony is relevant because acquiescence by competitors is supportive of both the validity and infringement of the patents-in-suit. *See In re Hayes Microcomputer Prod.*, 982 F.2d 1527, 1544 n.12 (Fed. Cir. 1992).

Second, RFD claims that PKT's argument concerning the minimum fluidization velocity requirement is meritless. RFD argues that PKT cannot dispute the fact that the KEY-PAC satisfies the minimum fluidization velocity requirement of the '124 and '630 patents. According

claims that the transitional particulate is the media in the transitional support layer 54 in the preferred embodiment disclosed in Figure 1 of the patents-in-suit. RFD notes that the Specifications of both patents state that the primary function of the transitional support layer is to support the filter media. Thus, RFD claims that the Virginia court's interpretation of the phrase "filter media" unquestionably encompasses support gravel that is precisely the media present in the gravel layer of the first version of the KEY-PAC.

⁵² RFD contends that PKT's President, Mr. Morris, defined the phrase "filter media" in such a way that it would not include the media in either the transitional support layer or the flocculation layer of the preferred embodiment of the '630 patent. Using PKT's definition, RFD argues that Claim 1 of the '630 patent requiring two layers of "filter media" would not cover the preferred embodiment of the '630 patent which consists of a filter layer, a transitional support layer and a flocculation layer.

to RFD, Dr. Letterman determined the minimum fluidization velocity of the filter layer of the KEY-PAC packaged water treatment plant to be slightly greater than 40 gpm/ft². RFD contends that the flow of influent during backwashing of the upflow filter of the KEY-PAC is less than 16 gpm/ft². Thus, RFD concludes that the KEY-PAC package water treatment plant satisfies the minimum fluidization velocity requirement present in the asserted claims of the '124 and '630 patents.

PKT responds that its equipment lacks multiple layers in the upflow filter. In support of this contention, PKT states that all claims of both patents require there to be multiple layers in the upflow filter. PKT also alleges that there is clear evidence that the support gravel in the PKT equipment is outside of the upflow filter. PKT states that an objective and authoritative publication that is a standard reference in the industry evidences that the support gravel does not contribute to particulate removal and is part of the underdrain, not part of the upflow filter. Next, PKT claims that there is at least a factual dispute as to whether the PKT support gravel is filter media.⁵³ Additionally, PKT argues that there is a factual dispute about the minimum fluidization velocity limitations. It notes that all claims of both patents have limitations as to minimum fluidization velocity and that RFD must prove what the velocity is in each accused PKT installation in order to prove infringement.⁵⁴ Finally, PKT argues that there is a factual

⁵³ PKT argues that there is factual dispute over this issue because Lee Roberts, owner and president of RFD and inventor of the patents-in-suit, testified that there is "very minimal" filtration in gravel and that the PKT support gravel is "not for filtration." Thus, PKT claims that there is a factual issue as to whether support gravel is "filter media."

⁵⁴ According to PKT, RFD has not proved the exact velocity at the disputed installations. It argues that RFD has simply submitted theoretical calculations made by Dr. Letterman. PKT contends that this calculation is erroneous because of false assumptions made by Dr. Letterman regarding water temperature, liquid viscosity, liquid density, liquid shape, and the effect of air being introduced to the process.

issue as to whether the PKT backwash process allows floc to remain in the filter intentionally.⁵⁵

RFD replies that PKT's arguments of no literal infringement do not raise a genuine issue of material fact. RFD argues that the "Specifications" of the patents-in-suit expressly teach that support gravel is filter media as that phrase has been defined by the Virginia court. RFD notes that the intrinsic evidence, as provided by the "Specifications" of the patents-in-suit, clearly establishes that support gravel is filter media.⁵⁶ RFD claims that PKT has ignored the proper intrinsic evidence and has provided the court with irrelevant, contradictory extrinsic evidence. RFD contends that PKT's extrinsic evidence is irrelevant because it was published seven years after the filing date of the patents-in-suit⁵⁷ and because it contradicts the intrinsic evidence.⁵⁸ Furthermore, RFD argues that the KEY-PAC package water treatment plant fulfills the minimum fluidization velocity requirements of the '124 and '630 patents. RFD asserts that the minimum fluidization velocity is determined by the formula contained in the patent.⁵⁹ Utilizing this formula, RFD states, Dr. Letterman has recalculated the minimum fluidization velocity of the filter layer in the upflow filter of the KEY-PAC package plant using water temperatures of 50° F

⁵⁵ PKT contends that the '124 patent claims require leaving floc in the filter layer after backwashing. It claims that its backwashing process does not intentionally leave floc in the filter.

⁵⁶ RFD comments that the Federal Circuit has repeatedly stated, in interpreting a claim, that one must first look to the intrinsic evidence, including the claims, the specification and prosecution history if it is in evidence. *See Vitronics Corp. v. Conceptronic Inc.*, 90 F.3d 1576, 1582 (1995).

⁵⁷ RFD states that the Federal Circuit has noted on several occasions that "a court must construe the claim language according to the standard of what those words would have meant to one skilled in the art as of the application date." *Weimer v. NEC Elec. Inc.*, 102 F.3d 534, 539 (1996).

⁵⁸ *See Southwall Tech., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1578 (Fed. Cir. 1995).

⁵⁹ *See supra* note 46.

and 72° F.⁶⁰ According to Dr. Letterman, the KEY-PAC package water treatment plant is still within the minimum fluidization velocity requirements of the '124 and '630 patents at these temperatures.

SUMMARY JUDGMENT STANDARD

Summary judgment may be granted based upon facts developed during the pleadings, discovery, and supplemental affidavits, etc., if together, they show that there is no genuine issue as to any material fact and that the moving party is entitled to judgment as a matter of law. *Celotex Corp. v. Catrett*, 477 U.S. 317, 322-23 (1986). A dispute is genuine "if the evidence is such that a reasonable jury could return a verdict for the nonmoving party." *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986). The party moving for summary judgment bears the initial burden of explaining the basis of his motion. *Id.* The non-moving party then bears the burden of showing that there are specific facts demonstrating that there is a genuine issue of fact for trial. *Id.* at 324. "When deciding whether summary judgment is appropriate, all evidence and reasonable factual inferences drawn therefrom are reviewed in a light most favorable to the non-moving party." *Korman v. HBC Florida, Inc.*, 182 F.3d 1291, 1293 (11th Cir. 1999). The trial court must resolve all reasonable doubts in favor of the non-moving party, but need not resolve all doubts in a similar fashion. *Barnes v. Southwest Forest Indus., Inc.*, 814 F.2d 607, 609 (11th Cir. 1987).

ANALYSIS

This civil action is based upon the patent laws of the United States, Title 35 of the United States Code. This court has jurisdiction under 28 U.S.C. §§ 1331, 1338(a).

⁶⁰ Dr. Letterman indicates that water filtered at the various KEY-PAC installations will be between 50° F and 72° F for a portion of the year due to the climates of these locations.

In examining whether a patent claim has been infringed, the court must engage in a two-step analysis: “First, the claim must be properly construed to determine its scope and meaning. Second, the claim as properly construed must be compared to the accused device or process.”

Carroll Touch, Inc. v. Electro Mechanical Sys., Inc., 15 F.3d 1573, 1576 (Fed. Cir. 1993).

Under the first step, the court should look first to the intrinsic evidence of record. *See Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff’d*, 517 U.S. 370 (1996). This form of evidence includes the patent itself, including the claims; the specification; and, if in evidence, the prosecution history. *Id.* at 979. Typically, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term. If that is the case, it is improper for the court to rely on extrinsic evidence. *See Pall Corp. v. Micron Separations, Inc.*, 66 F.3d 1211, 1216 (Fed. Cir. 1995). This is because the claims, specification, and file history, rather than extrinsic evidence, constitute the public record of the patentee’s claim; a record on which the public is entitled to rely. *See Markman*, 52 F.3d at 978-79. That said, extrinsic evidence may be used to help the court come to the proper understanding of the claims. This form of evidence is evidence which is “external to the patent and file history, such as expert testimony, inventor testimony, dictionaries, and technical treaties and articles.” *Id.* at 980. However, extrinsic evidence may not be used to vary or contradict the claim or specification language. *Id.* at 981.

As previously mentioned, the court must first look to the intrinsic evidence of record in interpreting an asserted claim. This is essentially a three-step process. First, the court must examine the words of the claims themselves to define the scope of the patented invention. *See Bell Communications Research, Inc. v. Vitalink Communications Corp.*, 55 F.3d 615, 620 (Fed. Cir. 1995). The words in the claim must be given their ordinary and customary meaning.

Second, the court must review the Specification to determine whether the inventor has used any terms in a manner inconsistent with their ordinary meaning. *See Markman*, 52 F.3d at 979. The Specification is highly relevant to the claim construction. It contains a “written description of the invention which must be clear and complete enough to enable those of ordinary skill in the art to make and use it.” *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). In fact, the Specification is usually dispositive on the issue of claim interpretation and “is the single best guide to the meaning of a disputed term.” *Id.* Finally, the court may consider the prosecution history of the patent. *See Markman*, 52 F.3d at 980. The history is significant because it “contains the complete record of all the proceedings before the Patent and Trademark Office, including any express representations made by the applicant regarding the scope of the claims.” *Vitronics*, 90 F.3d at 1582.

Claim Construction - The ‘124 Patent

RFD argues that the two KEY-PAC systems infringe Claims 1 through 4 of the ‘124 patent. In interpreting the claims of the ‘124 patent, the court begins its construction by examining the words of the claims. Independent Claim 1 reads as follows:

1. A method of washing an upflow filter between service runs, said upflow filter including a filter bed having a non-buoyant particulate media filter layer through which influent to be filtered is directed in an upward direction during each service run for causing floc in said influent to be retained in said layer, said method of washing including the steps of:

(a) directing a combination of air and liquid in an upflow direction through the filter layer with the velocity of the liquid being less than one-half the minimum fluidization velocity of the filter layer for disrupting only some floc retained in said layer during a previous service run, while leaving some floc attached to said particulate media in said filter layer; and thereafter

(b) directing only liquid in an upflow direction through the filter layer at a velocity less than one-half the minimum fluidization velocity of the filter layer for removing disrupted floc from the filter while leaving in said layer floc attached to said particulate media of said filter layer.

The language in Claim 1 clearly provides for an upflow filter that includes a “filter bed having a non-buoyant particulate media filter layer.” Influent is directed in an upward fashion during the service run causing floc to be retained in the filter layer.

The upflow filter is then washed in a two-step process. First, a combination of air and liquid is directed up through the filter layer with the velocity being less than one-half the minimum fluidization velocity of the filter layer. Second, liquid is directed up through the filter layer at a velocity less than one-half the minimum fluidization velocity. Dependent Claim 2 instructs that the liquid directed through the upflow filter during the washing cycle is the influent that is directed through the filter layer during the service run. Dependent Claim 3 teaches that the liquid is directed through the filter layer at substantially the same velocity of the influent during the service run. Finally, Dependent Claim 4 lists the liquid velocity and air flow rates for the washing cycle. The velocity of the liquid is to be in the range of approximately 5-20 gallons per minute/sq. ft. The air flow rate is to be in the range of approximately 1-9 standard cubic feet per minute/sq. ft.

The key limitation or element that is in dispute between the parties is the term “filter bed.” In independent Claim 1, RFD claimed that its present invention consists of an “upflow filter including a filter bed having a non-buoyant particulate media filter layer.” The term “filter bed” is not defined in independent Claim 1. RFD only indicates that it has a non-buoyant particulate media filter layer. The court must review the other claims to determine whether the term “filter bed” has been further defined.

The present invention covers two main concepts: (1) the construction and operation of an upflow pre-filter and (2) a method of washing a filter bed between service runs.⁶¹ Independent Claim 1 and dependent Claims 2 through 6 address the two-stage washing cycle. Independent Claim 7 and dependent Claims 8 through 17 address the construction of the filter bed in the upflow filter. Independent Claim 7 provides a detailed description of the “filter bed” in the upflow filter:

(a) providing, in said upflow filter, a filter bed having a non-buoyant particulate media filter layer and a particulate non-buoyant static flocculation layer upstream of said filter layer, in the direction of liquid flow through the filter bed, said particulate, non-buoyant static flocculation layer being composed of material that is coarser than said filter layer and having particulates of an effective size and uniformity coefficient for distributing the upward flow of influent during service runs and providing a velocity gradient for mixing said influent to promote flocculation without retaining substantial portions of floc in said flocculation layer, said filter layer retaining floc from said influent which is directed in an upflow direction through said filter bed.

The filter bed is also addressed in dependent Claim 12. This claim is dependent on Claim 7 and includes the step of “providing a transitional layer of particulate material between the flocculation layer and the filter layer, said flocculation layer through which influent first passes being coarser than the traditional layer.” In light of these claims, it is apparent that the filter bed in the ‘124 patent requires a flocculation, transitional, and filter layers.

Next, the court must examine the Specification to determine whether the inventor has used terms in a manner inconsistent with their ordinary meaning. A review of the Specification also supports the conclusion that the filter bed requires a flocculation, transitional, and filter layers.

⁶¹ In the Specification RFD states the scope of its invention: “However, the present invention relates to the construction and mode of operation of the upflow pre-filter 12, and in particular, to the construction of the non-buoyant bed and to the method of washing the bed between service runs.” See Column 6.

First, it is important to note that the Specification utilizes three distinct terms: 1) filter system, 2) filter bed, and 3) filter layer.⁶² The term filter system is defined to “include[] an upflow prefilter or contact clarifier 12 followed by a gravity flow, polishing filter 14.” RFD notes that “the present invention relates to the construction and mode of operation of the upflow pre-filter 12, and in particular, to the *construction* of the non-buoyant bed. . . .” (Emphasis provided). The term “filter bed” is described as “a *multi-media*, non-buoyant filter bed 26.” (Emphasis provided). According to the Specification, “[t]he filter bed 26 constitutes an important aspect of the present invention.” Finally, the term “filter layer” is defined as a clarifier layer that the part of the filter bed that is “designed to retain a large percentage of the floc which if formed in the lower flocculation layer. . . .”

Second, the “Summary of the Invention” section supports the conclusion that the filter bed is comprised of multiple layers. RFD states in this section that the “upflow filter includes a filter bed having a non-buoyant particulate clarifier or filter layer. . . .” Further, it states that “[a] filter bed *in accordance with this invention* includes an upstream, static flocculation layer of particulate, non-buoyant material. . . .” (Emphasis provided). It did not state that “in accordance with the most *preferred embodiment* of this invention.” It certainly could do this and did do this in the other paragraphs of this section.

Third, the “Brief Description of the Drawings” section supports the above conclusion. In this section RFD stated that FIG. 1 and 2 are “schematic, sectional view[s] of a filter system *embodying the present invention*, and showing its arrangement and operation during a washing

⁶² This conclusion is supported by RFD’s statement that the “object of this invention [is] to provide an extremely economical and effective method of washing a non-buoyant particulate *filter bed* in an upflow *filter system*.” (Emphasis provided).

cycle . . . [and] a service run.” (Emphasis provided). Both drawings depict an upflow filter with a filter bed comprised of three distinct and separate layers. The layers are numbered 52, 54, and 56 and depict lower static flocculation layer 52, transitional support layer 54, and filter layer 56.

Fourth, the “Description of the Preferred Embodiment of the Invention” section further dictates this conclusion. In this section RFD provides that “the most preferred embodiment of the invention includes a lower static flocculation layer 52, a transitional support layer 54 and a clarifier or filter layer 56.” The Specification indicates that each layer of the filter bed performs unique functions and has its own specific dimensions. Specifically, the lower flocculation layer 52 is “constructed to enhance distribution and flocculation of the coagulated influent.” The flocculation layer is to be preferably made up of coarse gravel having an effective size greater than 2 millimeters. The layer should also be 6-24 inches deep. It is designed in a way to aid in the distributing and flocculating of the influent without collecting substantial floc therein.

Turning to the transitional support layer 54, the function of this layer is to support the clarifier and filter layer 56 above the flocculation layer 52. The transitional support layer may catch some floc. However, that is not its primary function. In the preferred embodiment, the transitional support layer is formed of “coarse gravel having a specific gravity greater than 2.4, and effective size (ES) in the range of about 2.5-3.5 and a uniformity coefficient (UC) greater than 1.2.”

Finally, the clarifier or filter layer 56 retains the majority of the floc that begins to form in the flocculation layer 52 and moves into the filter layer 56. The filter layer 56 preferably has a depth greater than flocculation layer 52. It is formed of non-buoyant media, e.g., sand or gravel, that has a specific gravity greater than 2. The sand or gravel filter layer should also have an effective size greater than 1mm, a uniformity coefficient of 1.2-1.8 and a porosity of 36%-

40%.

RFD argues forcefully that this court should not consider the preferred embodiment in reaching this conclusion. It claims that the preferred embodiment is simply the best mode for their invention. Although a facially appealing argument, it cannot withstand further scrutiny. After a careful reading of the preferred embodiment it becomes apparent that it describes the claimed invention. For example, it provides that the flocculation layer is “made up of coarse gravel having an effective size (ES) greater than 2 millimeters, and preferably greater than 4 millimeters.” This is dependent Claim 16. It also provides that the coarse gravel of the flocculation layer is to have a specific gravity greater than 2. This is dependent Claim 15. The velocity gradient of the flocculation layer is to be approximately 40-60 reciprocal seconds at influent flow rates in the range of 10 to 15 gpm/sq. ft. This is dependent Claim 17. The filter layer is supposed to have a specific gravity greater than 2. This is dependent Claim 14. The preferred embodiment also states that filter layer is to have an effective size greater than 1mm. This is dependent Claims 9 and 10. The preferred embodiment goes on to discuss the two-stage wash cycle. The water flow rate is stated to be in the range of 5-20 gallons per minute per sq. ft. This is dependent Claim 4. The air flow rate is to be in the range of approximately 1-9 standard cubic feet per minute/sq. ft. This is dependent Claim 4. In light of these claims, the court finds that the preferred embodiment describes the claimed invention.

Finally, the decision of the United States District Court for the Eastern District of Virginia, in which RFD was a party, supports the conclusion that the upflow filter contains a filter bed consisting of multiple layers. That district court has already interpreted Claim 1 of the ‘124 patent to require a multi-layered upflow filter. It noted that although Claim 1 does not disclose multiple layers, Claim 7 and the Specification do disclose multiple layers. It rejected

RFD's claim differentiation argument finding that "the '124 patent sets forth a description of one invention, which compromises several facets." Furthermore, it rejected RFD's preferred embodiment argument finding that the "specification discloses one embodiment of the invention, and that is a method of washing an upflow filter which comprises multiple layers."

After reviewing the plain language of the claims, the Specification and the decision of the United States District Court for the Eastern District of Virginia, the court interprets Claim 1 through 4 as follows.⁶³ Claim 1 describes a method of washing an upflow filter between service runs. The upflow filter must include a filter bed. The filter bed is to be comprised of multiple layers: a lower static flocculation layer, a transitional support layer, and a clarifier or filter layer. Each layer performs a unique function and has different dimensions. Specifically, the flocculation layer is "designed to provide the velocity gradient needed to mix and flocculate the coagulated raw water, without retaining the formed floc therein." In contrast, the clarifier or filter layer is designed "to retain the floc formed in the [flocculation] layer 52." Finally, the transitional support layer is designed to have a specific gravity and effective size that allows it to support the clarifier or filter layer above the flocculation layer. After the service run, the upflow filter is washed to remove the floc that was retained in the clarifier or filter layer. The upflow filter is washed in a two-step process. The first wash stage involves directing a combination of air and liquid up through the upflow filter. The second wash stage involves directing only liquid up through the upflow filter. Each wash stage is carried out for a period of less than five minutes. The liquid directed through the upflow filter is the influent that was directed through the filter layer during the service run. The liquid is to be directed through the upflow filter at

⁶³ It is not necessary for this court to determine whether the ED of Virginia case collaterally estops RFD. The court does note that its decision is consistent with the holding of the Virginia case.

substantially the same velocity as the influent during the service run. The velocity of the liquid is to be in the range of 5-20 gallons per minute/sq. ft. The rate of air flow during the washing cycle is to be in the range of 1-9 standard cubic feet per minute/sq.ft.

Claim Construction - The '630 Patent

RFD argues that the two versions of the KEY-PAC system infringe Claims 1 through 4, 6 and 7 of the '630 patent. As previously mentioned, the court begins its construction of the claims of the '630 patent by examining the words of the claims. Independent Claim 1 reads as follows:

In a method for clarifying water is a filter system wherein during a filtering mode step influent water is passed upwardly in a first zone through particulate filter media contained therein and then sequentially is passed downward through a second zone through second particulate media contained therein, and during a backwash mode step liquid is passed upwardly through said particulate filter media in both said first and second zones, the improvement which comprises:

(a) providing said particulate media with a filter layer in the form of solid particles having a specific gravity in excess of 2 and an effective size greater than 1 millimeter; and

(b) during backwashing of said first zone, causing a combination of air and liquid to flow upwardly through the filter layer with the liquid flow rate being less than the minimum fluidization velocity of the filter layer and with the air flow rate being in the range of approximately 1-9 Scfm/ft.².

Claim 1 addresses a method of clarifying water. The filtering system is run in two modes: filtering and backwashing. During the filtering mode, influent water is passed upwardly in a "first zone through first particulate filter media contained therein." The first particulate media has a filter layer "in the form of solid particles having a specific gravity in excess of 2 and an effective size greater than 1 millimeter." The influent then travels downward through a "second

zone through second particulate filter media contained therein.” In the backwashing mode, the influent is passed upwardly through the “particulate filter media in both said first and second zones.” During backwashing of the first zone, a combination air and liquid scour is directed up through the filter layer with a flow rate being less than one-half the minimum fluidization velocity of the filter layer and with the “air flow rate being in the range of approximately 1-9 Scfm/ft.².”

Dependent Claim 2 instructs that the liquid utilized during backwashing is the influent liquid that was directed through the filter layer during the filtering mode step. Dependent Claim 3 provides that the liquid is to travel at substantially the same velocity during the backwashing and filtering modes. Dependent Claim 4 indicates that the velocity of the liquid during backwashing is to be less than one-half the minimum fluidization velocity. Dependent Claim 6 instructs that the filter layer is to be formed of solid particles having a specific gravity in excess of 2.5 and an effective size of at least 1.7 millimeters. Finally, dependent Claim 7 provides that the liquid influent is to have a turbidity less than 100 NTU.

After examining the words of Claim 1, the court turns to the Specification for a detailed written description and visual depiction of the invention. The “filter system” referred to in Claim 1 has “an upflow prefilter or contact clarifier 12 followed by a gravity flow, polishing filter 14.” Inside prefilter 12 is a multimedia, non-buoyant filter bed 26. This is consistent with the Claim 1 first zone of first particulate media.

The Specification describes the process of Claim 1 in detail. First, influent flows into the upflow prefilter 12 after being mixed with coagulating chemicals. Second, the influent is directed up through a multimedia, non-buoyant filter bed 26. After passing through filter bed 26, the influent flows into a receiving trough positioned above polishing filter 14. The influent then

overflows the receiving trough and travels downward through a conventional multimedia, non-buoyant filter bed 40 located in polishing filter 14. This is consistent with the declaration in Claim 1 that influent travels up through the first zone of filter media and sequentially travels down through a second zone of filter media.⁶⁴

The first zone of particulate filter media in Claim 1 corresponds to the multimedia, non-buoyant filter bed 26 referred to in the Specification.⁶⁵ The non-buoyant filter bed 26 is visually depicted in Figure 2 of the '630 patent as the filter bed in the upflow prefilter (first zone). As with the '124 patent, the preferred embodiment includes three layers in filter bed 26: a lower static flocculation layer 52, a transitional support layer 54, and a clarifier or filter layer 56. These three layers are visually depicted in Figures 1 and 2 of the patent. Each layer serves the same function and are the same dimensions as the layers found in filter bed 26 of the '124 patent.

After examining the words of Claim 1 and the written description and visual depiction of the invention in the Specification, the court interprets Claim 1 as follows. The filter system must have two zones: an upflow prefilter and a gravity flow polishing filter. The upflow prefilter must have a multimedia, non-buoyant filter bed. This bed must have multiple layers: a flocculation layer, a transitional support layer, and a clarifier or filter layer.⁶⁶ The filter layer of

⁶⁴ The second zone of filter media in Claim 1 corresponds to the multimedia, non-buoyant filter bed 40 located in polishing filter 14.

⁶⁵ This conclusion is supported by the decision of the United States District Court for the Eastern District of Virginia. In that decision, the district court found that the '630 patent requires a multi-layered upflow filter. The court noted that the word "layer", as used in the Specification, delineates a part of the filtration system that has a discrete function. It stated that the Specification provides that "'the multi-media, non-buoyant filter bed 26, employed in the most preferred embodiment of the invention includes a lower static flocculation layer 52, a transitional support layer 54 and a clarifier or filter layer 56. . . . A 'filter bed' then, potentially comprises a flocculation layer and a transitional layer as well as a filter layer.'"

⁶⁶ The court finds that the Specification describes the invention itself and not merely the preferred embodiment. In support of this conclusion, the court notes that the Specification states that the drawing accompanying the patent "is a schematic, sectional view of a filter system embodying the present invention." For

this filter bed in the upflow filter (first zone) must be in the form of solid particles having a specific gravity in excess of 2 and an effective size greater than 1 millimeter.

Turning to the patented process, influent must be directed up through the multimedia filter bed in the upflow prefilter during the filtering mode. The influent then must travel down through a second particulate filter media in the polishing filter. During the backwash mode, liquid is passed upwardly through the upflow prefilter and polishing filter. During backwashing of the upflow prefilter, air and liquid are directed up through the filter layer with the liquid flow rate being less than one-half the minimum fluidization velocity of the filter layer.

Literal Infringement

The second step of the infringement analysis “is comparing the properly construed claims to the device accused of infringing.” *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff’d*, 517 U.S. 370 (1996). In order to prove literal infringement, it must be shown that the accused device “contains each limitation of the claim exactly; any deviation from the claim precludes a finding of literal infringement.” *Litton Sys., Inc. v. Honeywell, Inc.*, 140 F.3d 1449, 1454 (Fed. Cir. 1998). This court has interpreted the claims of the ‘124 and ‘630 patents to require a filter bed comprised of three layers: a lower static flocculation layer, a transitional support layer, and a clarifier or filter layer. It is undisputed that PKT’s installations at Warren Springs, AL; Canyon Lake, TX; Arlington, WA; Millport, AL; and Imperial Valley, CA, only have an upflow filter with a sand monomedia filter layer. Since the KEY-PAC system at these installations only has a single layer of filter media, the court finds that they do not literally infringe the ‘124 and ‘630 patents.

additional reasons, *see supra* pp. 42-45.

Slightly more troublesome is the KEY-PAC system that utilizes a layer of sand media over a layer of support gravel. This KEY-PAC system is employed at the Wilamina, OR; Waterloo Springs, AL; Toyah, TX; and Fort Station, NM installations. Both parties place great emphasis on whether the gravel is actually located in the upflow filter or is located in an underdrain below the upflow filter. The court's resolution of this issue does not require a finding on this question. As previously addressed, the court interprets the claims in the '124 and '630 patents as requiring a filter bed comprised of three layers. Assuming, without deciding, that the gravel layer is actually located in the upflow filter, the KEY-PAC would only have two filter layers. Thus, the court finds that the KEY-PAC system at these installations does not literally infringe the '124 and '630 patents.

Doctrine of Equivalents

RFD argues that the KEY-PAC system with only a sand monomedia filter layer infringes Claims 1 through 4 of the '124 patent and Claims 1 through 4, 6 and 7 of the '630 patent. RFD seeks a finding of equivalence for the filter bed element. Specifically, it claims that the sand monomedia filter layer in PKT's upflow filter is equivalent to RFD's multiple layered upflow filter bed. The court concludes that the doctrine of equivalence does not apply for two reasons.

First, the court finds that PKT's sand monomedia filter layer is not an insubstantial and unimportant change from RFD's three-layer filter bed. The Supreme Court has recently addressed the applicability of the doctrine of equivalence. *See Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, No. 00-1543, 2002 WL 1050479 (U.S. May 28, 2002).⁶⁷ The Supreme

⁶⁷ After outlining the development of the doctrine of equivalence, the Supreme Court addressed the defense of prosecution history estoppel. PKT argues that prosecution history estoppel bars the application of the doctrine of equivalence as it applies to the '124 and '630 patents. For purposes of the court's holding it need not reach the issue of prosecution history estoppel. For a discussion of that issue, however, see *Townsend Engineering Co. v. HITEC Co., Ltd.*, 829 F.2d 1086, 1090-91 (Fed. Cir. 1987).

Court stated that it reaffirmed the doctrine enunciated in *Graver Tank & Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605 (1950). The Supreme Court stated the following:

Graver Tank held that patent claims must protect the inventor not only from those who produce devices falling within the literal claims of the patent but also from copyists who ‘make *unimportant and insubstantial changes and substitutions* in the patent which, though adding nothing, would be enough to take the copied matter outside the claim, and hence outside the reach of the law.’

Festo, 2002 WL 1050479, at *7 (internal citation omitted) (emphasis added). The doctrine of equivalence was created to protect the patentee from copyists who make unimportant and insubstantial changes in the patent. Thus, if the changes are important and substantial, the doctrine is not to be applied.⁶⁸

In this case PKT has made an important and substantial change to the element for which RFD seeks a finding of equivalence: the filter bed. PKT utilizes a monomedia sand filter layer to flocculate and filter the water in its upflow filter. In contrast, RFD specifically designed a three layer filter bed which, per the patentee’s language, “constitutes an *important aspect* of the present invention.” See ‘124 Patent, Column 5 (emphasis provided). The filter bed element was designed in such a way to enhance the washing procedure of the upflow filter (‘124 patent) and to enhance the method for clarifying water (‘630 patent). For example, RFD specifically states the importance of the distinction and function of the flocculation and filter layers:

A filter bed in accordance with this invention includes an upstream, static flocculation layer of particulate, non-buoyant material having a porosity and particle size for providing a velocity gradient in the range of approximately 40-60 reciprocal seconds at liquid flow rates in the range of 10-15 gallons per minute/sq. ft., to thereby promote the mixing and flocculation of the coagulated

⁶⁸ This conclusion is further supported by the following statement made by the Supreme Court in *Festo*: “The doctrine of equivalents allows the patentee to claim those *insubstantial alterations* that were not captured in drafting the original patent claim but which could be created through trivial changes.” *Festo*, 2002 WL 1050479, *7 (emphasis added).

liquid influent. *By promoting flocculation in the flocculation layer turbidity removal in the downstream filter layer is enhanced, with lengthened service run times being achieved without creating an excessive headloss.*

See '124 Patent, Column 4 (emphasis added). RFD claims that the flocculation layer is the coarsest layer and "is constructed to enhance distribution and flocculation of the coagulated influent." See '124 Patent, Column 6. It also states that the size and porosity of the flocculation layer is specifically selected "for aiding in distributing and flocculating the influent directed through the flocculation layer, without collecting substantial floc therein." *Id.* RFD distinguishes the flocculation layer from the filter layer again by noting that it functions entirely differently from the filter layer "in that it is designed to provide the velocity gradient needed to mix and flocculate the coagulated raw water, without retaining floc therein. In distinction, the clarifier layer 56 [filter layer] functions to retain the floc" *Id.* It is evident that RFD selected the size and porosity of the particles and the depths of each layer with a specific goal in mind. Finally, it is apparent that the water and air flow rates of the washing method were selected by RFD pursuant to the makeup of the filter bed. In fact, RFD designed the filter bed and selected the water and air flow rates in an effort to keep the filter bed from being fluidized during the backwashing procedure.

PKT's monomedia sand filter layer flocculates and filters the influent that passes through the KEY-PAC. It does not employ a separate flocculation layer of a particular porosity and particle size that provides the velocity gradient of RFD's system. As such, it is not designed to enhance turbidity removal below the filter layer.⁶⁹ The court finds that this distinction is not unimportant and insubstantial. Thus, the doctrine of equivalents cannot be applied.

⁶⁹ This change is significant according to the patentee's own patent language because it claims that this setup will lengthen service run times without creating excessive headloss.

Second, the court will also not apply the doctrine because it would cause the limitation in the claim to encompass the prior art. The Federal Circuit has clearly established “that limitations in a claim cannot be given a range of equivalents so wide as to cause the claim to encompass anything in the prior art.” *Senmed, Inc. v. Richard-Allan Medical Indus., Inc.*, 888 F.2d 815, 821 (1989).⁷⁰ RFD seeks a finding that PKT’s sand monomedia filter layer in its upflow filter is equivalent to its three-layer filter bed in its upflow filter. This finding is impermissible because it would encompass prior art because sand has been the traditional filter media in upflow filters. This prior art has been documented in Carl Hamann and Ross E. McKinney’s 1968 article entitled *Upflow Filtration Process*. The following excerpts from the article reveal that upflow filters utilizing sand filter layers have been in prior art for hundreds of years:

According to Baker, filtration of water by upflow through sand was documented first in 1685 when Porzio, an Italian physician, published a description of a multiple-filter scheme. Porzio advocated using sand to filter water by first filtering downward and then upward, with a partition in the filtration vessel to separate the two operations.

....

There have been many installations of upflow filters. The first known municipal installation was at Greenock, Scotland, in 1827. The Greenock filters were slow sand filters, constructed so either upflow or downflow filtration could be employed, with cleaning to be accomplished by reversing the flow.

....

More recently, renewed interest has been shown in upflow filtration for municipal and industrial use. In Russia in 1953-54, upflow filters were tested and developed by Minz and later installed at Moscow, Leningrad, Cheliabinsk, Gorkii, Juibyshev, Kiev, Rostov-on-Don, Taganrog, and Ufa. The Russian version of the upflow filter is known as the “contact clarifier” and is used for

⁷⁰ See also *Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 900 (Fed. Cir. 1984) (“If equivalence appears, infringement will be found unless (1) arguments or amendments made by applicant during prosecution (prosecution history estoppel) estop the patentee from asserting a range of equivalence broad enough to encompass the accused product or process; or (2) the equivalent device is within the public domain, i.e., found in the prior art . . .”) (Emphasis added). Also see cases holding that the range of equivalents is narrow where the art is crowded and the patent represents a small advance: *Minerals Separation v. Butte & Superior Mining Co.*, 250 U.S. 336, 345-46 (1919); *Eibel Process Co. v. Minnesota & Ontario Paper Co.*, 261 U.S. 45, 63 (1923); and *LaSalle v. Carlton’s Laydown Service, Inc.*, 680 F.2d 432,435 (5th Cir. 1982).

purifying waters having turbidities of up to “150 mg/l.”

With contact clarification, coagulation and clarification are combined in one process by adding a chemical coagulant to the raw water before it passes into an upflow sand filter.

....

Ives of University College, London, has directed much research on filtration, including upflow filtration, during the last several years. Laboratory tube-filter studies, conducted by Diaper and Ives, showed upflow sand filtration to be more efficient than downflow sand filtration under same conditions of operation.

....

A 3-ft diameter upflow sand filter of the grid type has been operated at Luton at the East Hyde Sewage Works for the past 2 years. This pilot filter was compared with the nine convention sand filters (6.0 mgd capacity, each), providing polishing or tertiary treatment of effluent from the two-stage biological treatment plant. Results indicated that upflow filtration would be superior to downflow sand filtration with respect to filtrate quality and length of run to a given head loss.

....

The objective of these studies was to evaluate the feasibility of purifying Kansas River water by combining coagulation and filtration in one high-rate process. The method used was to be similar to the Russian contact clarification process, and coagulants were to be injected into the raw water immediately ahead of two upflow sand filters

See Hamann and McKinney, at pp. 1023-32. The monomedia sand filter layer in the KEY-PAC’s upflow filter has been in the prior art for hundreds of years. As such, the court cannot enter a finding that it is equivalent to RFD’s three-layer filter bed. *See Gen. Am. Transp. Corp. v. Cryo-Trans, Inc.*, 93 F.3d 766, 770-71 (Fed. Cir. 1996) (holding that district court’s finding of infringement under the doctrine of equivalence was clearly erroneous because “the finding violated the principle that the doctrine may not be used to expand the scope of the patentee’s right to exclude so as to encompass the prior art.”).

Although the court holds that the doctrine of equivalence is not applicable to the ‘124 and ‘630 patents, it notes that if it were applicable, the “all elements” rule would present a sufficient

defense for PKT.⁷¹ Infringement may be found if PKT's system performs substantially the same overall function or work, in substantially the same way, to obtain substantially the same overall results as RFD's system. See *Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 901-02 (Fed. Cir. 1984). Further, "[i]t is . . . well settled that each element of a claim is material and essential, and that in order for a court to find infringement, the plaintiff must show the presence of every element or its substantial equivalent in the accused device." *Lemelson v. U.S.*, 752 F.2d 1538, 1551 (Fed. Cir. 1985). The Federal Circuit has declared that to be a "substantial equivalent," the "element substituted in the accused device for the element set forth in the claim must not be such as would substantially change the way in which the function of the claimed invention is performed." *Perkin-Elmer Corp. v. Westinghouse Elec. Corp.*, 822 F.2d 1528, 1533 (Fed. Cir. 1987).

Under the doctrine, infringement of the '124 and '630 patents may be found if the KEY-PAC system⁷² performs substantially the same overall function, in substantially the same way, to

⁷¹ The Supreme Court has explained that the doctrine of equivalents, when applicable, requires that the accused product contain each limitation of the claim or its equivalent. See *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 40 (1997). An element in the accused product is equivalent to a claim element if the differences between the two are "insubstantial" to one of ordinary skill in the art. *Id.* at 39-40. There are two primary legal limitations on this doctrine that must be determined by the court on a dispositive pretrial motion. See *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 234 F.3d 558, 586 (Fed. Cir. 2000). These legal limitations are prosecution history estoppel and the "all elements" rule. *Id.*

Initially, the court should consider prosecution history estoppel because it may completely bar the doctrine to a given claim element. *Id.* The first stage of this analysis is to determine which claim elements are alleged to be met by equivalents. *Id.* The second stage is to determine whether the elements at issue were amended during the prosecution of the patent. *Id.* If the claim elements at issue were amended, "the court first must determine whether the amendment narrowed the literal scope of the claim. If so, prosecution history estoppel will apply unless the patent holder establishes that the amendment was made for purposes unrelated to patentability." *Id.*

If the court finds that prosecution history estoppel does not bar the doctrine of equivalents, it must consider the second legal limitation, the "all elements" rule. *Id.* at 587. There can be no infringement under the doctrine of equivalents if even one element of a claim or its equivalent is not present in the accused device. See *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 935-39 (Fed. Cir. 1987).

⁷² The KEY-PAC system with only a single layer of sand monomedia has been installed at five locations: Warren Springs, AL; Canyon Lake, TX; Arlington, WA; Millport, AL; and Imperial Valley, CA. The Imperial Valley installation is not yet operational. Thus, RFD must show the presence of every element or its substantial

obtain substantially the same overall results as the RFD's system. *See Pennwalt*, 833 F.2d at 935. In making this comparison, the court cannot ignore the claim limitations in the '124 and '630 patents. *Id.* As the Federal Circuit explained:

[I]n applying the doctrine of equivalents, each limitation must be viewed in the context of the entire claim. "It is . . . well settled that each element of a claim is material and essential, and that in order for a court to find infringement, the plaintiff must show the presence of every element or its substantial equivalent in the accused device."

Perkin-Elmer v. Westinghouse Elec. Corp., 822 F.2d at 1533 (internal citation omitted).

The court has interpreted Claim 1 of the '124 and '630 patents to require a three-layer filter bed in the upflow filter. It is undisputed that the four KEY-PAC systems in question have upflow filters. It is also undisputed that they have a non-buoyant particulate media filter layer. However, the KEY-PAC system at these installations does not have a three-layer filter bed. Consequently, the court must consider whether the KEY-PAC's sand monomedia filter layer is substantially equivalent to RFD's three-layer filter bed. PKT concedes that flocculation and filtration occur in the sand monomedia. However, the limitation of a transitional support layer is not actually present. There is no equivalent in the accused device that supports the filter layer above the flocculation layer. Since there is no equivalent in the KEY-PAC system for the transitional support layer, this court finds that the doctrine of equivalence, even if otherwise applicable, cannot be applied to the '124 and '630 patents. *See Carroll Touch, Inc. v. Electro Mech. Sys.*, 15 F.3d 1537, 1539 (Fed. Cir. 1993) ("Indeed, infringement cannot be established unless every limitation of a claim is satisfied either exactly or by an equivalent in the accused device."); *Gen. Am. Transp. Corp. v. Cryo-Trans, Inc.*, 93 F.3d 766, 771 (Fed. Cir. 1996)

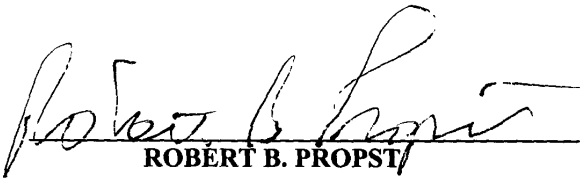
equivalent at these four installation for there to be a finding of infringement.

(holding that district court's finding of infringement under the doctrine of equivalents was clearly erroneous because "[t]here can be no infringement as a matter of law if a claim limitation is totally mission from the accused device."").

SUMMARY

The court ultimately concludes that the defendant(s) have not infringed in any manner on any patent of the plaintiff and that all plaintiff's claims of infringement are due to be dismissed, with prejudice. The judgment in favor of the defendant(s) will be entered as a final judgment pursuant to Rule 54(b) of the Federal Rules of Civil Procedure. The court will also deny the countervailing motions of the plaintiff with reference to infringement and certify that order for appeal pursuant to 28 U.S.C. § 1292(b).

This 31st day of May 2002.


ROBERT B. PROPST
SENIOR UNITED STATES DISTRICT JUDGE